

EXHIBIT A

ZTE makes this disclosure based upon its present understanding of the Asserted Patents and the prior art. ZTE's investigation regarding the Asserted Patents and potential grounds for invalidity is ongoing, and ZTE reserves the right to supplement these Invalidity Contentions with prior art not included in this disclosure that may become relevant to invalidity as discovery progresses, additional research is conducted, and/or prior art is discovered. ZTE further reserves the right to supplement and/or modify these Invalidity Contentions to assert additional defenses under 35 U.S.C. §§ 102, 103, and/or 112, including in response to WSOU's infringement theories, WSOU's contentions or any findings as to the priority or invention date of the Asserted Claims of the Asserted Patents, claim construction positions taken or orders issued, expert discovery, or otherwise pursuant to the Federal Rules of Civil Procedure, Local Rules, and/or Court Orders.

These Invalidity Contentions are based on information reasonably known and available to ZTE at this time. ZTE has not completed its investigation of the facts and documents relating to this action and has not completed its preparation for trial. Because ZTE's investigation, prior art search, and analysis are still ongoing, ZTE may identify additional prior art or contentions that will add meaning to already known prior art or contentions, or possibly lead to additions or changes to these contentions. ZTE reserves its rights to amend, modify, or supplement the contentions stated herein.

To the extent that these Invalidity Contentions rely on or otherwise suggest particular constructions of terms or phrases in the Asserted Claims, ZTE is not proposing any such constructions as proper constructions of those terms or phrases. The Court has not issued a claim construction order. Accordingly, for purposes of these invalidity contentions, ZTE may set forth alternative, and even inconsistent, claim construction positions. In particular, certain contentions, including those in the attached charts, may be based on claim constructions that appear to underlie

WSOU's infringement contentions. ZTE does not concede that WSOU's apparent constructions are proper and may contest any such constructions. Moreover, ZTE does not admit that any accused product or service, or that any of ZTE's other products or services, infringes any of the Asserted Claims of the Asserted Patents.

Nothing in these Invalidity Contentions should be interpreted as an admission that any claim satisfies the written description, enablement, or definiteness requirements, or the requirements associated with means-plus-function claims, pursuant to 35 U.S.C. § 112. Similarly, nothing in these Invalidity Contentions concerning the failure of any claim to satisfy 35 U.S.C. § 112 should be interpreted as an admission that any element in the prior art fails to disclose any element in the claimed inventions of the Asserted Claims of the Asserted Patents.

ZTE contends that each of the Asserted Claims of the Asserted Patents is invalid at least under 35 U.S.C. §§ 102, 103 and/or 112. ZTE's invalidity charts cite to exemplary teachings and disclosures of the prior art as applied to features of the Asserted Claims of the Asserted Patents. However, persons having ordinary skill in the art may view an item of prior art generally in the context of their experience, training, other publications, literature, products, and understanding. Accordingly, ZTE reserves the right to rely on portions of the prior art references that are not cited and on other publications and expert testimony as aids in understanding and interpreting the cited portions, as providing context thereto, and as additional evidence that a claim limitation is known or disclosed. ZTE further reserves the right to rely on portions of the prior art references that are not cited, other publications, and testimony to establish bases for combinations of certain cited references that render the Asserted Claims of the Asserted Patents obvious.

The references discussed in the claim charts, or elsewhere identified, may disclose the limitations of the Asserted Claims of the Asserted Patents explicitly and/or inherently. The prior

art references may also be relied upon to show the state of the art in the relevant time frame. The exemplary obviousness combinations are provided in the alternative to ZTE's anticipation contentions, and are not to be construed to suggest that any reference is not itself anticipatory.

Further, ZTE may rely on inventor admissions concerning the scope of the prior art relevant to the Asserted Patents found in, *inter alia*: the patent prosecution history corresponding to each of the Asserted Patents and any patents or patent applications related to the Asserted Patents; any deposition testimony of any named inventor on any of the Asserted Patents and any patents or patent applications related to the Asserted Patents in this action or any other action; and the papers filed and any evidence submitted by WSOU in connection with this action or other actions.

ZTE reserves the right to allege that the Asserted Claims of the Asserted Patents are invalid under 35 U.S.C. § 102(f)⁴ in the event that ZTE obtains evidence that the inventors named in the Asserted Patents did not invent (either alone or in conjunction with others) the subject matter claimed in the Asserted Patents. If ZTE obtains such evidence, it will provide the name of the person(s) from whom and the circumstances under which the invention or any part of it was derived.

During prosecution of the Asserted Patents and related patents, WSOU made numerous admissions concerning prior art in the specification and/or the prosecution history, including admissions that certain claim elements of certain Asserted Claims of the Asserted Patents were present in the prior art. WSOU is thus estopped from taking positions inconsistent with its admissions in the prosecution history of the Asserted Patents and related patents. ZTE thus reserves the right to assert that WSOU should be estopped from arguing that prior art does not

⁴ The pre-AIA invalidity statutes apply to this case because the Asserted Patents each has an effective filing date before March 16, 2013.

disclose the claim elements that WSOU has already admitted are disclosed in the prior art should WSOU assert otherwise.

ZTE incorporates by reference, in full, all prior art references and related patents (e.g., any patent that issued from any parent or ancestral application related in any way to a given patent and any continuing application, continuation-in-part application, divisional application, file-wrapper continuation, reexamination proceeding, reissue application, abandoned application or foreign counterpart application for that patent) cited in the Asserted Patents, their prosecution histories, and all references cited therein.

Pursuant to the First Amended Scheduling Order (Dkt. No. 45), ZTE also produces:

(a) technical documents, including software where applicable, sufficient to show the operation of the accused product(s); and

(b) summary, annual sales information for the accused product(s) for the two years preceding the filing of the Complaint.

ZTE's production of documents pursuant to the First Amended Scheduling Order should not be considered an admission that any of the Accused Instrumentalities alleged by WSOU infringe any of the Asserted Patents. ZTE reserves the right to supplement its production as deemed appropriate and necessary in the future.

I. ASSERTED CLAIMS

ZTE's Invalidity Contentions are limited to the Asserted Claims (the "Asserted Claims") identified by WSOU in its November 3, 2020 Disclosures of Preliminary Infringement Contentions, as reproduced below.

Asserted Patent	Asserted Claims
7,203,505	Claims 1, 3, 11, 14, 23, 25, 33
7,742,534	Claims 1-18
7,489,929	Claims 1-15

9,258,232	Claims 1, 14
9,185,036	Claims 1-24
7,487,240	Claims 1-19
8,451,839	Claims 1-12
9,294,060	Claims 1, 10
8,730,905	Claims 1-26
8,179,960	Claims 1-3, 9, 10, 15-17, 23, 24
8,147,071	Claims 1, 9, 10, 13, and 14

II. PRIORITY DATE

Based on WSOU's November 3, 2020 Disclosures of Preliminary Infringement Contentions, ZTE understands that WSOU is asserting the following priority dates for the Asserted Patents:

Asserted Patent	Asserted Priority Date
7,203,505	No later than August 30, 2001
7,742,534	No later than August 1, 2005
7,489,929	No later than March 31, 2005
9,258,232	No later than October 18, 2007
9,185,036	No later than March 23, 2005
7,487,240	No later than April 15, 2003
8,451,839	No later than September 7, 2006
9,294,060	No later than May 25, 2010
8,730,905	No later than November 4, 2010
8,179,960	No later than November 12, 2008
8,147,071	No later than April 29, 2009

To the extent the Court allows WSOU to assert earlier priority dates, ZTE reserves its right to supplement its contentions to include additional prior art.

III. IDENTIFICATION OF PRIOR ART

The identified prior art references and systems below disclose the limitations of the Asserted Claims of the Asserted Patents explicitly, inherently, or as part of an obvious combination, and may also be relied upon to show the state of the art at the relevant times. ZTE may also rely upon persons identified as inventors of the prior art patents, authors of the prior art publications, individuals with personal knowledge of prior art systems, and/or others as they

become identified through further discovery. In addition, ZTE may rely upon the facts as developed in discovery of prior invention or derivation of the alleged inventions claimed in the Asserted Patents.

Additionally, the prior art references cited by ZTE include references that are related to patent applications and issued patents that contain substantially the same subject matter (e.g., published U.S. patent applications, and issued U.S. patents, foreign applications or issued patents). Any citation to or quotation from any of these patent applications or patents, therefore, encompasses any parallel citation to the same subject matter in other related or corresponding applications or patents. For example, where a claim chart cites a published patent application that ultimately issued as a patent with substantially the same specification, ZTE may rely upon the published patent application or the issued patent as prior art.

Much of the art identified in the attached Exhibits/charts reflects the common knowledge of persons of ordinary skill in the art and the state of the relevant art at the time of the earliest claim to priority. ZTE may rely on additional citations, references, expert testimony, and other material to provide context or to aid in understanding the cited portions of the references or cited features of the systems. ZTE may also rely on expert testimony explaining relevant portions of references, relevant hardware or software products or systems, and other discovery regarding these subject matters. Additionally, ZTE may rely on other portions of any prior art reference for purposes of explaining the background and general technical subject area of the reference.

Further, WSOU has not yet provided adequate discovery on products embodying the Asserted Patents that may have been previously used, publicly disclosed, published, offered for sale or sold prior to the alleged invention of the Asserted Patents. ZTE reserves the right to supplement or amend these contentions based on future discovery related to WSOU products

embodying the prior art.

A. The '505 Patent

The following prior art references, and any products, devices, or methods known or used in the prior art that embody the subject matter disclosed in those prior art references, anticipate and/or render obvious the Asserted Claims of the '505 Patent:

Prior Art Patent References

Patent Number	Country of Origin	Date of Issue/Publication
5,353,328	U.S.	October 4, 1994
6,097,961	U.S.	August 1, 2000
6,275,575	U.S.	August 14, 2001
6,301,471	U.S.	October 9, 2001
6,501,956	U.S.	December 31, 2002
6,560,456	U.S.	May 6, 2003
6,633,759	U.S.	October 14, 2003
2002/0087596	U.S.	July 4, 2002
2002/0123307	U.S.	September 5, 2002
2002/0161769	U.S.	October 31, 2002
2003/0078890	U.S.	April 24, 2003
1,039,768	E.P.	September 27, 2000
1998/047270	WO	October 22, 1998
1998/057507	WO	December 17, 1998
1999/061984	WO	December 2, 1999
2000/057339	WO	September 28, 2000
6,272,359	U.S.	August 7, 2001
7,058,036	U.S.	June 6, 2006
6,014,089	U.S.	January 11, 2000
6,393,297	U.S.	May 21, 2002
7,072,056	U.S.	July 4, 2006
6,438,585	U.S.	July 23, 1997
5,553,094	U.S.	October 8, 1991
2002/0077133	U.S.	June 20, 2002
7,274,926	U.S.	April 5, 2001
6,915,138	U.S.	February 9, 2000
4,771,378	U.S.	December 27, 1985
7,295,532	U.S.	February 20, 2003
2001/0035006	KR.	May 7, 2001
6,938,100	U.S.	June 28, 2001
7,031,945	U.S.	April 18, 2006

Patent Number	Country of Origin	Date of Issue/Publication
6,925,481	U.S.	November 28, 2002
7,058,036	U.S.	June 6, 2006
6,014,089	U.S.	January 11, 2000
6,393,297	U.S.	May 21, 2002
7,072,056	U.S.	July 4, 2006
6,671,757	U.S.	December 30, 2003
6,757,543	U.S.	November 28, 2002
7,289,792	U.S.	October 30, 2007
6,016,478	U.S.	January 18, 2000
733,242	AU	May 10, 2001
2001/039103	WO	May 31, 2001
2003/0140145	U.S.	July 24, 2003
5,794,142	U.S.	August 11, 1998
6,327,479	U.S.	December 4, 2001
2001/0005857	U.S.	June 28, 2001

Prior Art Publications

Title	Date of Publication	Author and Publisher
Supplementary European Search Report (02770138.2 dated Mar. 27, 2006)	March 27, 2006	Search Report
SyncML Sync Protocol, version 1.0 (pp. 1-60)	December 7, 2000	Ericson, IBM, Motorola, Nokia, etc.
SyncML Representation Protocol, version 1.0 (pp. 1-104)	December 7, 2000	Ericson, IBM, Motorola, Nokia, etc.
Nokia 9110 – User’s Manual	June 7, 1998	Nokia.
Nokia 8210	October 1999	Nokia
Agpcs - an automatic gsm-based positioning and communication system	August 26-29, 1997	N/A
Tools for Handheld Supercomputing: An Assessment of the Wireless Application Protocol (WAP)	May 30, 2000	Bernholdt et al.
Any Network, Any Terminal, Anywhere	April 1999	Fasbender and et al.
Proxync: A Framework for Proxy-based Mobile Database with SyncML	January 1, 2001	Park and Hwang
A Multimedia Communication Architecture for Handheld Devices	1998	Meggers and Sang-Bum Park

Prior Art Use, Sale, and/or Offer for Sale

Item	Date	Person or Entity
Nokia 9110 – User’s Manual	June 7, 1998	Nokia.
Nokia 8210	October 1999	Nokia

B. The ’534 Patent

The following prior art references, and any products, devices, or methods known or used in the prior art that embody the subject matter disclosed in those prior art references, anticipate and/or render obvious the Asserted Claims of the ’505 Patent:

Prior Art Patent References

Patent Number	Country of Origin	Date of Issue/Publication
5,726,978	U.S.	March 10, 1998
6,266,531	U.S.	July 24, 2001
6,397,077	U.S.	May 28, 2002
2002/0119781	U.S.	August 29, 2002
2002/0181421	U.S.	December 5, 2002
2005/0232135	U.S.	October 20, 2005
2005/0286547	U.S.	December 29, 2005
2006/0198293	U.S.	September 7, 2006
2007/0025458	U.S.	February 1, 2007
2007/0025459	U.S.	February 1, 2007
2008/0287066	U.S.	November 20, 2008
2009/0042529	U.S.	February 12, 2009
1,699,197	E.P.	September 6, 2006
2005/015801	W.O.	February 17, 2005
2005/020489	W.O.	March 3, 2005
2004/208234	JP.	July 22, 2004
2007/0195897	U.S.	August 23, 2007
2005/0099937	U.S.	May 12, 2005
2009/0005109	U.S.	January 1, 2009
6,721,569	U.S.	April 13, 2004
7,933,195	U.S.	September 15, 2005
10,834,706	U.S.	August 8, 2019
5,956,642	U.S.	September 21, 1999
7,949,060	U.S.	December 31, 2009
7,391,750	U.S.	March 24, 2005
2004/0264507	U.S.	December 30, 2004
7,602,872	U.S.	July 6, 2006

Patent Number	Country of Origin	Date of Issue/Publication
2005/0281226	U.S.	December 22, 2005
8,488,706	U.S.	April 29, 2010
2005/0289256	U.S.	December 29, 2005
2005/0157639	U.S.	July 21, 2005
2005/0044362	WO.	January 13, 2005
9,184,898	U.S.	February 1, 2007
2005/0201474	U.S.	September 15, 2005
2005/160079	JP.	June 16, 2005
8,934,848	U.S.	September 7, 2006
2005/0068884	U.S.	March 31, 2005
7,200,177	U.S.	January 15, 2004
7,680,199	U.S.	June 15, 2006
9,408,220	U.S.	October 19, 2006
7,414,964	U.S.	June 15, 2006
8,593,932	U.S.	September 14, 2006
2006/0023745	U.S.	February 2, 2006
2007/0026808	U.S.	February 1, 2007
9,294,218	U.S.	January 19, 2006
7,864,745	U.S.	June 23, 2005

Prior Art Publications

Title	Date of Publication	Author and Publisher
Multiuser Diversity Orthogonal Frequency Division Multiple Access Systems	Dec. 2004	Patrick Svedman
R1-040039 - Text Proposal for User Traffic Multiplexing Based on Frequency Scheduling	January 22, 2004	N/A
R1-03-01265 - Adaptive subcarrier allocation and modulation scheme selection in OFDM System	November 19, 2003	N/A
R1-050631 - Motivation for localized and distributed physical subchannels in EUTRA - System Level Simulations	June 20-21, 2005	N/A
R1-030769 - Group-wise Antenna Selective Transmit Diversity in OFDM Systems	August 22, 2003	N/A
Adaptive Multicarrier Modulation: A Convenient Framework for Time-Frequency Processing in Wireless Communications	May 2000	Keller and Hanzo
Improved HARQ Scheme Using	May 17-19,	Cai et al.

Title	Date of Publication	Author and Publisher
Channel Quality Feedback for OFDM Systems	2004	
Adaptive Modulation Techniques for Duplex OFDM Transmission	Sept, 2000	Keller and Hanzo
An Orthogonal Multicarrier DS-SS Radio Access Scheme for Wireless LAN	September 25, 1996	Cacopardi et al.

C. The '929 Patent

The following prior art references, and any products, devices, or methods known or used in the prior art that embody the subject matter disclosed in those prior art references, anticipate and/or render obvious the Asserted Claims of the '929 Patent:

Prior Art Patent References

Patent Number	Country of Origin	Date of Issue/Publication
6,609,003	U.S.	August 19, 2003
2003/0060230	U.S.	March 27, 2003
2003/0147370	U.S.	August 7, 2003
2005/0266847	U.S.	December 1, 2005
2006/0135075	U.S.	June 22, 2006
1,377,101	E.P.	January 2, 2004
1,432,262	E.P.	June 23, 2004
2001/099291	W.O.	December 27, 2001
2008/0280611	U.S.	November 13, 2008
2004/102848	W.O.	November 25, 2004
1,003,765,87	KR.	March 17, 2003
5,790,528	U.S.	August 4, 1998
2007/0171867	U.S.	July 26, 2007
2007/0191013	U.S.	August 16, 2007
2007/0115884	U.S.	May 24, 2007
2002/0045451	U.S.	April 18, 2002
2004/0170136	U.S.	September 2, 2004
6,337,983	U.S.	January 8, 2002
7,369,856	U.S.	May 25, 2006
7,363,038	U.S.	September 23, 2004
2003/0003464	KR.	January 10, 2003
5,790,528	U.S.	August 4, 1998

Patent Number	Country of Origin	Date of Issue/Publication
2002/0034947	U.S.	March 2, 2002
6,633,554	U.S.	October 14, 2003
100337897	KR.	January 9, 2002
7,006,828	U.S.	February 28, 2006
6,141,554	U.S.	October 31, 2000
2940615	JP.	August 25, 1999
2362297	GB.	January 31, 2001
2004/056144	WO	July 1, 2004
100729425	KR.	February 20, 2002
100371837	KR.	February 12, 2003
6,542,744	U.S.	April 1, 2003
6,590,879	U.S.	July 8, 2003
2003/0056136	KR.	July 4, 2003
5,917,811	U.S.	June 29, 1999

Prior Art Publications

Title	Date of Publication	Author and Publisher
PCT International Search Report for International Application No. PCT/US2006/009715	March 17, 2006	Search Report
Written Opinion of the International Searching Authority relating to International Application No. PCT/US2006/009715	March 17, 2006	Search Report
RP-99148: S2.31 V001: RRC Protocol Specification	March 7, 1999	N/A
R4-99804: Requirements on Handover	December 7, 1999	N/A
TR 25.877 V5.1.0 (2002-06)	June 17, 2002	N/A
TS 25.308 V6.3.0 (2004-12)	December 21, 2004	N/A
R2-020088: Mobility Examples when the UE has an HS-PDSCH Assignment	January 4, 2002	N/A
Recent advances on td-scdma in china	January 17, 2005	N/A
Optimum reserved resource allocation scheme for handoff in CDMA cellular system	January 2000	Kwon et al.

D. The '232 Patent

The following prior art references, and any products, devices, or methods known or used in the prior art that embody the subject matter disclosed in those prior art references, anticipate and/or render obvious the Asserted Claims of the '232 Patent:

Prior Art Patent References

Patent Number	Country of Origin	Date of Issue/Publication
6,788,686	U.S.	September 7, 2004
6,952,424	U.S.	October 4, 2005
2004/0015599	U.S.	January 22, 2004
2006/0248242	U.S.	November 2, 2006
8,072,887	U.S.	December 6, 2011
7,929,430	U.S.	April 19, 2011
7,724,660	U.S.	May 25, 2010
7,447,152	U.S.	November 4, 2008
7,684,330	U.S.	March 23, 2010
7,512,066	U.S.	March 31, 2009
7,916,718	U.S.	March 29, 2011
7,529,191	U.S.	March 16, 2005
7,715,419	U.S.	March 6, 2006
7,978,725	U.S.	March 6, 2006
7,480,246	U.S.	April 23, 2007
2007/0253333	U.S.	April 27, 2006
7,675,855	U.S.	January 23, 2003
7,489,628	U.S.	January 24, 2005
6,973,032	U.S.	December 4, 2000
8,018,937	U.S.	February 14, 2000
7,342,881	U.S.	June 20, 2003
7,912,003	U.S.	June 27, 2007
6,408,005	U.S.	September 6, 1997
7,706,255	U.S.	January 29, 2007
6,678,277	U.S.	November 9, 1999
7,304,942	U.S.	November 15, 2002
7,508,763	U.S.	September 4, 2003
7,782,778	U.S.	December 8, 2004
7,948,883	U.S.	July 12, 2007
7,948,878	U.S.	February 7, 2006
2002/0191542	U.S.	May 22, 2002

Prior Art Publications

Title	Date of Publication	Author and Publisher
Introduction to Flow and Congestion Control	November 1996	Omiydar & Puolle IEEE
ATM Congestion Control	August 21, 1995	Lu
TCP Performance Implications of Network Path Asymmetry	December 2002	Balakrishnan, Padmanabhan, Fairhurst, & Sooriyabandara

E. The '036 Patent

The following prior art references, and any products, devices, or methods known or used in the prior art that embody the subject matter disclosed in those prior art references, anticipate and/or render obvious the Asserted Claims of the '036 Patent:

Prior Art Patent References

Patent Number	Country of Origin	Date of Issue/Publication
6,148,005	U.S.	November 14, 2000
6,219,339	U.S.	April 17, 2001
6,222,839	U.S.	April 24, 2001
6,418,119	U.S.	July 9, 2002
6,424,620	U.S.	July 23, 2002
6,463,035	U.S.	October 8, 2002
6,556,541	U.S.	April 29, 2003
6,636,510	U.S.	October 21, 2003
6,650,618	U.S.	November 18, 2003
6,751,195	U.S.	June 15, 2004
6,754,222	U.S.	June 22, 2004
6,771,601	U.S.	August 3, 2004
7,180,857	U.S.	September 26, 2002
7,240,124	U.S.	January 23, 2003
7,283,476	U.S.	July 31, 2003
7,369,498	U.S.	May 6, 2008
2001/0012269	U.S.	August 9, 2001
2002/0103911	U.S.	August 1, 2002
2002/0136163	U.S.	September 26, 2002
2003/0076781	U.S.	April 24, 2003

Patent Number	Country of Origin	Date of Issue/Publication
2003/0081546	U.S.	May 1, 2003
2003/0107994	U.S.	June 12, 2003
2003/0133406	U.S.	July 17, 2003
2004/0037276	U.S.	February 26, 2004
2004/0073641	U.S.	April 15, 2004
2004/0179470	U.S.	September 16, 2004
2005/0052994	U.S.	March 10, 2005
2005/0100031	U.S.	May 15, 2005
7,693,051	U.S.	April 6, 2010
7,734,808	U.S.	June 8, 2010
7,724,656	U.S.	May 25, 2010
7,468,945	U.S.	December 23, 2008
7,327,698	U.S.	July 24, 2003
7,225,267	U.S.	January 27, 2003
2003/0218977	U.S.	May 24, 2002
7,042,841	U.S.	July 16, 2001
6,980,520	U.S.	June 11, 2001
6,424,624	U.S.	October 7, 1998
6,035,333	U.S.	November 24, 1997
2006/0104298	U.S.	November 15, 2004
2006/0176810	U.S.	February 9, 2005
2003/0112829	U.S.	December 13, 2001
7,626,926	U.S.	December 9, 2004
2005/0108444	U.S.	November 19, 2003
7,688,731	U.S.	November 20, 2001
6,728,213	U.S.	March 23, 2001
1,018,248	EP	July 12, 2000
6,160,793	U.S.	October 13, 1998
5,835,484	U.S.	September 12, 1997
100367093	KR	January 6, 2003
100454180	KR	October 26, 2004
5,506,839	U.S.	July 27, 1994
6,870,811	U.S.	January 18, 2001
5,167,033	U.S.	June 27, 1990
2004/0095882	U.S.	May 20, 2004

Prior Art Publications

Title	Date of Publication	Author and Publisher
Flow Control and Congestion Avoidance in Switched Ethernet LANs	August 6, 2002	Ren & Landry
Selective Back-Pressure in Switched	1999	Noureddine & Tobagi

Title	Date of Publication	Author and Publisher
Ethernet LANS		
CODA: Congestion Detection and Avoidance in Sensor Networks	November 2003	Wan, Eisenman, & Campbell
Congestion avoidance in computer networks with a connectionless network layer part i: concepts, goals and methodology	September 2, 1998	Jain & Ramakrishnan
A Hop by Hop Rate-based Congestion Control Scheme	1992	Mishra & Kanakia
RAP: An End-to-end Rate-based Congestion Control Mechanism for Realtime Streams in the Internet	1999	Rejaie, Handley, & Estrin IEEE
IEEE 802.11 Tutorial	June 2002	Ergen
IEEE 802.11 Standard	1999	IEEE
CODA: Congestion Detection and Avoidance in Sensor Networks	2003	Wan, Eisenmann, & Campbell

F. The '240 Patent

The following prior art references, and any products, devices, or methods known or used in the prior art that embody the subject matter disclosed in those prior art references, anticipate and/or render obvious the Asserted Claims of the '240 Patent:

Prior Art Patent References

Patent Number	Country of Origin	Date of Issue/Publication
5,974,237	U.S.	October 26, 1999
6,031,528	U.S.	February 29, 2000
6,205,122	U.S.	March 20, 2001
6,222,827	U.S.	April 24, 2001
6,298,043	U.S.	October 2, 2001
6,397,248	U.S.	May 28, 2002
6,494,831	U.S.	December 17, 2002
6,502,130	U.S.	December 31, 2002
6,581,166	U.S.	June 17, 2003
6,615,276	U.S.	September 2, 2003
6,636,898	U.S.	October 21, 2003
6,646,564	U.S.	November 11, 2003
6,694,367	U.S.	February 17, 2004
6,760,767	U.S.	July 6, 2004

Patent Number	Country of Origin	Date of Issue/Publication
6,965,572	U.S.	November 15, 2005
7,124,183	U.S.	March 27, 2003
7,162,250	U.S.	November 18, 2004
7,194,538	U.S.	March 20, 2007
2004/0162781	U.S.	August 19, 2004
2001/0037358	U.S.	November 1, 2001
6,711,615	U.S.	March 23, 2004
8,767,715	U.S.	October 21, 2004
7,359,328	U.S.	April 15, 2008
7,924,713	U.S.	April 12, 2011
7,020,143	U.S.	June 18, 2001
7,327,681	U.S.	February 5, 2008
7,161,942	U.S.	January 9, 2007
7,920,472	U.S.	April 5, 2011
2006/0218302	U.S.	April 11, 2003
2004/0165597	U.S.	February 20, 2003
7,124,438	U.S.	March 8, 2002
5,621,889	U.S.	April 15, 1997
7,145,857	U.S.	December 21, 2001
6,581,166	U.S.	March 1, 2002
5,751,964	U.S.	May 12, 1998
7,249,189	U.S.	January 9, 2003
6,496,858	U.S.	December 17, 2002
7,197,561	U.S.	March 28, 2002
7,383,577	U.S.	June 3, 2002
7,124,183	U.S.	May 16, 2002
2003/0009699	U.S.	June 13, 2002
7,607,169	U.S.	December 2, 2002
7,506,040	U.S.	December 2, 2002
6,453,345	U.S.	May 7, 1997
7,359,328	U.S.	March 11, 2003
6,230,194	U.S.	July 14, 1997
2003/021376	U.S.	March 13, 2003
7,337,228	U.S.	November 28, 2001
6,499,107	U.S.	December 29, 1998
4,601,011	U.S.	March 18, 1985

Prior Art Publications

Title	Date of Publication	Author and Publisher
HIDE: a Hierarchical Network Intrusion Detection System Using	June 5, 2001	Zhang, Li, Manikopoulos,

Title	Date of Publication	Author and Publisher
Statistical Preprocessing and Neural Network Classification		Jorgenson, & Ucles
Specification-based Anomaly Detection: A New Approach for Detecting Network Intrusions	November 22, 2002	Sekar, Gupta, Frullo, Shanbhag, Tiwari, Yang, & Zhou
Network intrusion and fault detection: a statistical anomaly approach	December 10, 2002	Manikopoulos & Papavassiliou
Check network status with this Perl script	March 25, 2002	Danen

G. The '839 Patent

The following prior art references, and any products, devices, or methods known or used in the prior art that embody the subject matter disclosed in those prior art references, anticipate and/or render obvious the Asserted Claims of the '839 Patent:

Prior Art Patent References

Patent Number	Country of Origin	Date of Issue/Publication
5,922,049	U.S.	July 13, 1999
6,697,360	U.S.	February 24, 2004
7,385,973	U.S.	June 10, 2008
2002/0138614	U.S.	September 26, 2002
2006/0140164	U.S.	June 29, 2006
2008/0212598	U.S.	September 4, 2008
2002/217941	JP.	August 2, 2002
2004/0011936	KR.	February 11, 2004
7,320,070	U.S.	January 15, 2008
7,590,074	U.S.	September 15, 2009
7,903,647	U.S.	March 8, 2011
6,240,464	U.S.	May 29, 2001
2005/0105524	U.S.	May 19, 2005
6,185,624	U.S.	February 6, 2001
6,952,428	U.S.	January 26, 2001
7,133,365	U.S.	December 28, 2001
0483547	EP	May 6, 1992
7,719,987	U.S.	March 15, 2005
7,388,869	U.S.	November 17, 2003
7,486,659	U.S.	July 10, 2003

Patent Number	Country of Origin	Date of Issue/Publication
7,561,517	U.S.	October 29, 2009
2002/0138854	U.S.	September 13, 2001
7,706,301	U.S.	October 8, 2003
8,331,383	U.S.	October 27, 2009
2006/0235973	U.S.	April 14, 2005
7,636,360	U.S.	March 29, 2006
7,689,716	U.S.	June 28, 2006
6,304,556	U.S.	August 24, 1998
5,987,521	U.S.	July 10, 1995
8,069,204	U.S.	August 31, 2006
6,654,387	U.S.	May 21, 1999
6,560,203	U.S.	May 27, 1998
6,185,524	U.S.	February 6, 2001

Prior Art Publications

Title	Date of Publication	Author and Publisher
PowerConnect Application Note #38, What is VLAN Routing?, Dell	February, 2004	Dell
Layer 2 and 3 Virtual Private Networks: Taxonomy, Technology, and Standardization Efforts	June, 2004	Knight & Lewis
Configuring the Cisco IOS DHCP Relay Agent	May 2, 2005	Cisco Systems, Inc.
A Routing Scheme for Content-Based Networking	March, 2004	Carzaniga, Rutherford, & Wolf University of Colorado
DHCP - Statically Configured Routes Using a DHCP Gateway	April 2, 2005	Cisco Systems, Inc.
A Cross-Layer (Layer 2 + 3) Handoff Management Protocol for Next-Generation Wireless Systems	August 28, 2006	Mohanty & Akyildiz IEEE
ANODR: Anonymous On Demand Routing with Untraceable Routes for Mobile Ad-hoc Networks	May, 2003	Kong & Hong University of California

H. The '060 Patent

The following prior art references, and any products, devices, or methods known or used in the prior art that embody the subject matter disclosed in those prior art references, anticipate

and/or render obvious the Asserted Claims of the '060 Patent:

Prior Art Patent References

Patent Number	Country of Origin	Date of Issue/Publication
5,455,888	U.S.	October 3, 1995
6,539,355	U.S.	March 25, 2003
8,527,283	U.S.	May 12, 2011
0,732,687	E.P.	September 18, 1996
1,420,389	E.P.	May 19, 2004
2008/060068	W.O.	May 22, 2008
2006/0282262	U.S.	December 14, 2006
7,359,854	U.S.	April 15, 2008
7,630,881	U.S.	December 8, 2009
7,693,714	U.S.	April 6, 2010
2010/0063806	U.S.	March 11, 2010
6,711,536	U.S.	March 23, 2004
7,577,567	U.S.	August 18, 2009
9,031,834	U.S.	May 12, 2015
2007/0005351	U.S.	January 4, 2007
2007/0282599	U.S.	December 6, 2007
8,239,191	U.S.	August 7, 2012
7,912,711	U.S.	March 22, 2011
2009/0265167	U.S.	October 22, 2009
2008/0027720	U.S.	January 31, 2008
2008/0126085	U.S.	May 29, 2008
8,731,209	U.S.	September 16, 2010
2010/0023325	U.S.	January 28, 2010
100579797	KR.	December 5, 2005
8,849,656	U.S.	May 3, 2012
5,960,388	U.S.	September 28, 1999
7,630,881	U.S.	May 18, 2006
7,693,714	U.S.	August 24, 2006
6,807,524	U.S.	October 19, 2004
7,181,402	U.S.	March 13, 2003
5,978,759	U.S.	November 2, 1999
6,289,311	U.S.	September 11, 2001
2009/0132260	U.S.	May 21, 2009
2008/0300866	U.S.	May 31, 2006
5,890,125	U.S.	March 30, 1999
6,611,800	U.S.	August 26, 2003
2007/0055519	U.S.	March 8, 2007

Prior Art Publications

Title	Date of Publication	Author and Publisher
Bandwidth Extension of Speech Signals, Vol. 13 Springer Science & Business Media	March 2008	Iser, Bernd, Gerhard, Schmidt, and Wolfgang Minker
Artificial bandwidth expansion method to improve intelligibility and quality of AMR-coded narrowband speech	2005	L. Laaksonen et al.
Neural Network-Based Artificial Bandwidth Expansion of Speech	March, 2007	Juho Kontio et al.
Speech bandwidth extension: extrapolations of spectral envelop and harmonicity quality of excitation	May 2006	N/A
Bandwidth expansion of speech based on vector quantization of the mel frequency cepstral coefficients	August 6, 2002	N/A

I. The '905 Patent

The following prior art references, and any products, devices, or methods known or used in the prior art that embody the subject matter disclosed in those prior art references, anticipate and/or render obvious the Asserted Claims of the '905 Patent:

Prior Art Patent References

Patent Number	Country of Origin	Date of Issue/Publication
7,050,452	U.S.	May 23, 2006
7,116,682	U.S.	October 3, 2006
2005/0208956	U.S.	September 22, 2005
2007/0054667	U.S.	March 8, 2007
2008/0227403	U.S.	September 18, 2008
2011/0053521	U.S.	March 3, 2011
2007/0211668	U.S.	September 13, 2007
2007/0115879	U.S.	May 24, 2007
7,630,401	U.S.	December 8, 2009
2008/0253325	U.S.	October 16, 2008
2006/0245352	U.S.	November 2, 2006
2009/0092944	KR.	September 2, 2009
2009/0219879	U.S.	September 3, 2009
8,345,588	U.S.	January 1, 2013

Patent Number	Country of Origin	Date of Issue/Publication
2008/060071	W.O.	May 22, 2008
2010/0272054	U.S.	October 28, 2010
2004/0048609	U.S.	March 11, 2004
2007/0073805	U.S.	March 29, 2007
7,756,096	U.S.	December 4, 2008
7,050,452	U.S.	May 23, 2002
2005/0208956	U.S.	September 22, 2005
7,729,293	U.S.	September 11, 2003
8,503,377	U.S.	March 25, 2010
8,340,071	U.S.	June 3, 2010
8,644,772	U.S.	March 3, 2011
1679841	E.P.	July 12, 2006
4247199	JP.	October 19, 2006
7,804,849	U.S.	January 31, 2008
5,502,722	U.S.	March 26, 1996
2005/0096091	U.S.	May 5, 2005
6,967,937	U.S.	November 22, 2005
7,969,958	U.S.	November 27, 2008
8,902,866	U.S.	September 6, 2007
2010/0142436	U.S.	June 10, 2010
7,693,122	U.S.	January 4, 2007
7,957,356	U.S.	November 30, 2006
8,699,421	U.S.	July 24, 2008
2007/0038736	U.S.	February 15, 2007
2006/0054206	KR.	May 22, 2006
9,036,518	U.S.	January 5, 2012
6,370,153	U.S.	April 9, 2002
2008/0205338	U.S.	August 28, 2008
101152932	KR.	March 15, 2007
2007/0211668	U.S.	September 13, 2007
7,054,329	U.S.	June 13, 2002

Prior Art Publications

Title	Date of Publication	Author and Publisher
IEEE 802.11-09/0992r15, "IEEE P802.11 Wireless LANs, Specification Framework for TGae," Intel	Sep. 2010	Robert Stacey
Modelling of the rach channel in a real environment for a high efficiency and stability on wireless communications	September 18, 2002	N/A
Quality of Service Through Bandwidth	March 2009	Guimaraes et al.

Title	Date of Publication	Author and Publisher
Reservation on Multirate ad hoc Wireless Networks		
Wireless Medium Access Control Protocols	April 2000	Gummalla and Limb
QoS Routing in Ad Hoc Wireless Networks	August 1999	Lin and Liu

J. The '960 Patent

The following prior art references, and any products, devices, or methods known or used in the prior art that embody the subject matter disclosed in those prior art references, anticipate and/or render obvious the Asserted Claims of the '960 Patent:

Prior Art Patent References

Patent Number	Country of Origin	Date of Issue/Publication
5,657,086	U.S.	August 12, 1997
6,351,493	U.S.	February 26, 2002
0,840,514	E.P.	May 6, 1998
2008/008331	W.O.	January 17, 2008
2006/0146934	U.S.	July 6, 2006
2005/0157793	U.S.	July 21, 2005
2006/0165302	U.S.	July 27, 2006
7,298,913	U.S.	November 20, 2007
8,817,885	U.S.	August 26, 2014
2007/0073779	U.S.	March 29, 2007
2006/0239349	U.S.	October 26, 2006
8,411,744	U.S.	April 2, 2013
2006/0091215	KR.	August 18, 2006
8,064,520	U.S.	November 22, 2011
8,054,884	U.S.	November 8, 2011
2006/0222067	U.S.	October 5, 2006

Prior Art Publications

Title	Date of Publication	Author and Publisher
“Adaptive Intra Prediction Padding to Improve Intra Motion Compensation,” Picture Coding Symposium,	April 24, 2006-April 26, 2006	Jianpeng Dong and Nam Ling

Title	Date of Publication	Author and Publisher
XP030080231		
“Integer Transforms for H.26L Using Adaptive Block Transforms,” Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG (ISO/IEC JTC1/SC29/WG11 and ITU-T SG16 Q6), Document Q15k24, XP030003117	Aug. 22-25, 2000	Mathias Wien et al.
PCT International Search Report dated Apr. 16, 2010 (PCT/US2009/063537)	April 16, 2010	Search Report
Error resilient video coding using virtual reference picture	March 14, 2005	N/A

K. The '071 Patent

The following prior art references, and any products, devices, or methods known or used in the prior art that embody the subject matter disclosed in those prior art references, anticipate and/or render obvious the Asserted Claims of the '071 Patent:

Prior Art Patent References

Patent Number	Country of Origin	Date of Issue/Publication
7,500,758	U.S.	March 10, 2009
2006/0256298	U.S.	November 16, 2006
2010/0031201	U.S.	February 4, 2010
2009/0079945	U.S.	March 26, 2009
2009/0091710	U.S.	April 9, 2009
4872411	JP	February 8, 2012
2006/0103811	U.S.	May 18, 2006
6,764,185	U.S.	August 7, 2003
2008/0231763	U.S.	March 21, 2007
2006/0290896	U.S.	December 28, 2006
2009/0153749	U.S.	December 14, 2007
2005/0041156	U.S.	February 24, 2005
2005/0219472	U.S.	October 6, 2005
2009/0310038	U.S.	June 17, 2008
2008/0048979	U.S.	July 9, 2003
2009/0207322	U.S.	June 19, 2007
2009/0295712	U.S.	May 29, 2008
2007271914	JP	October 18, 2007

Patent Number	Country of Origin	Date of Issue/Publication
2009/0303447	U.S.	June 5, 2008
2007/01952121	U.S.	February 17, 2006
2007/0154070	U.S.	December 9, 2002
2002/0001044	U.S.	January 3, 2002
2006/0119799	U.S.	July 1, 2005
2006/0087627	U.S.	April 27, 2006
2006/0285089	U.S.	December 21, 2006
2004/0150801	U.S.	August 5, 2004
2005/0030486	U.S.	February 10, 2005
2005099617	JP	April 14, 2005
2005195939	JP	July 21, 2005
2004/0247160	U.S.	December 9, 2004
2004/0095317	U.S.	May 20, 2004

Prior Art Publications

Title	Date of Publication	Author and Publisher
Interacting with Dynamically Defined Information Spaces using a Handheld Projector and a Pen	October 2006	Cao, Balakrishnan University of Toronto
Multi-projector display with continuous self-calibration	August 2008	Zhou, Wang, Akbarzadeh, & Yang University of Kentucky
A self-correcting projector	December 2001	Raskar & Beardsley IEEE
A projector-camera system with real-time photometric adaptation for dynamic environments	June 2005	Fujii, Grossberg, & Nayar Columbia University

IV. THE ASSERTED CLAIMS ARE ANTICIPATED AND OBVIOUS

ZTE describes below whether each item of prior art (i) anticipates an Asserted Claim of the Asserted Patents, and/or (ii) renders obvious an Asserted Claim of the Asserted Patents in combination with another prior art reference or the knowledge of a person of ordinary skill in the relevant art at the time of the alleged invention.

To the extent that prior art identified by ZTE as anticipating is found not to anticipate, ZTE further contends the prior art establishes that the claimed subject matter was obvious to a person

of ordinary skill in the art at the time of the alleged invention. In addition, obviousness is supported by the discussions in the cited references, the state of the art discussed in the references, and the knowledge of one of ordinary skill in the art as discussed below in Section VI.

While ZTE has identified at least one citation per element or limitation for each reference identified in the charts, each and every disclosure of the same element or limitation in the same reference is not necessarily identified. In an effort to focus the issues, ZTE has cited exemplary relevant portions of identified references even where a reference may contain additional disclosures for a particular claim element or limitation. ZTE reserves all rights to rely on other portions of the identified references to support its claims and defenses. Persons of ordinary skill in the art generally read a prior art reference as a whole and in the context of other publications and literature. ZTE may rely on un-cited portions of the prior art references and on other publications and expert testimony to provide context and as aids to understanding and interpreting the portions of the prior art references that are cited. Disclosures relating to initial elements of dependent claims are disclosed in connection with the independent claims from which they depend.

ZTE may also rely on un-cited portions of the prior art references, other publications, and the testimony of experts to establish that a person of ordinary skill in the art would have been motivated to modify or combine certain of the cited references or to have applied his or her general knowledge and common sense so as to render the claims obvious. Where ZTE cites to a particular figure in a prior art reference, the citation should be understood to encompass, in addition to the figure itself, the caption and description of the figure, and any text relating to the figure. Similarly, where a cited portion of text refers to a figure, the citation should be understood to include the figure as well.

ZTE may also rely upon persons identified as inventors of the patents and authors of the publications disclosed in the charts, as well as individuals identified in any of the parties' initial disclosures and discovery responses, and others as they become identified through further discovery, as prior inventors, as persons of ordinary skill in the art, or as persons having knowledge of, or having previously used, publicly disclosed, published, offered for sale or sold, the alleged inventions claimed in the Asserted Patents. In addition, ZTE may rely upon the facts as developed in discovery of prior invention or derivation of the alleged inventions claimed in the Asserted Patents. Discovery is ongoing and ZTE continues to investigate and analyze the prior art. ZTE reserves the right to supplement or amend these contentions based on the results of such investigation and analysis.

ZTE may rely upon a subset of the cited references or all of the references depending upon the Court's claim construction and further investigation and discovery. In addition, because multiple claims may contain the same or similar elements, ZTE may not have listed every reference that discloses a particular element in each instance of that element in the Asserted Claims. Accordingly, to provide disclosure for any given element, ZTE reserves the right to rely upon any reference identified in the accompanying charts that disclose that element. ZTE's contentions that the references, in various combinations, render certain Asserted Claims obvious under 35 U.S.C. § 103 are in no way an admission or suggestion that each reference does not independently anticipate the Asserted Claims under 35 U.S.C. § 102. With respect to certain claims, ZTE provides the exemplary obviousness combinations in the alternative to their anticipation contentions in the event that WSOU identifies elements in one or more of the cited references that it believes are not present. WSOU has thus far not identified any limitation(s) that it believes are not present in any of the cited prior art references. If and when WSOU identifies any such

elements, ZTE reserves the right to identify other references and combinations that would have made it obvious to add the allegedly missing limitation to the disclosed device or its characteristics.

If WSOU challenges the combinations identified in the accompanying charts, ZTE reserves the right to supplement these invalidity contentions to substitute or add other references to combine and to identify reasons to combine particular references with one another with additional particularity.

A. Accompanying Invalidity Contention Chart Exhibit Listings

Where Defendants cite to a particular document describing a prior art reference, the citation should be understood to be exemplary only. Where Defendants cite to a particular figure, the citation should be understood to encompass, in addition to the figure itself, the caption and description of the figure, and any text relating to the figure. Similarly, where a cited portion of text refers to a figure, the citation should be understood to include the figure as well. In addition, citations necessarily include any contextual descriptions and disclosures in the reference.

1. The '505 Patent

- A1: Invalidity Claim Chart for Haller
- A2: Invalidity Claim Chart for Nokia 9110
- A3: Invalidity Claim Chart for Kivelä
- A4: Invalidity Claim Chart for Song
- A5: Invalidity Claim Chart for Yu

2. The '534 Patent

- B1: Invalidity Claim Chart for Cheng
- B2: Invalidity Claim Chart for Hiramatsu
- B3: Invalidity Claim Chart for Kim

3. The '929 Patent

- C1: Invalidity Claim Chart for Kim
- C2: Invalidity Claim Chart for Miklos
- C3: Invalidity Claim Chart for Hwang
- C4: Invalidity Claim Chart for 3GPP

4. The '232 Patent

- D1: Invalidity Claim Chart for Casley
- D2: Invalidity Claim Chart for Siva
- D3: Invalidity Claim Chart for Oh
- D4: Invalidity Claim Chart for Segel
- D5: Invalidity Claim Chart for Smith

5. The '036 Patent

- E1: Invalidity Claim Chart for Ozer
- E2: Invalidity Claim Chart for Bergamasco

6. The '240 Patent

- F1: Invalidity Claim Chart for Porras
- F2: Invalidity Claim Chart for Clubb
- F3: Invalidity Claim Chart for Judge
- F4: Invalidity Claim Chart for Bearden

7. The '839 Patent

- G1: Invalidity Claim Chart for Baum
- G2: Invalidity Claim Chart for Dondeti
- G3: Invalidity Claim Chart for Kanekar
- G4: Invalidity Claim Chart for Fijolek
- G5: Invalidity Claim Chart for Necka

8. The '060 Patent

- H1: Invalidity Claim Chart for Vos
- H2: Invalidity Claim Chart for Sathyendra
- H3: Invalidity Claim Chart for Laaksonen
- H4: Invalidity Claim Chart for Choo

9. The '905 Patent

- I1: Invalidity Claim Chart for Kneckt
- I2: Invalidity Claim Chart for Agrawal
- I3: Invalidity Claim Chart for Kwon
- I4: Invalidity Claim Chart for Cervello

10. The '960 Patent

- J1: Invalidity Claim Chart for Caglar
- J2: Invalidity Claim Chart for Han
- J3: Invalidity Claim Chart for Shibayama
- J4: Invalidity Claim Chart for Walker

- J5: Invalidity Claim Chart for Cha

11. The '071 Patent

- K1: Invalidity Claim Chart for Zhang
- K2: Invalidity Claim Chart for De Haan
- K3: Invalidity Claim Chart for Klosowiak

V. ANTICIPATION UNDER 35 U.S.C. § 102

Section 102(a) provides that “[a] person shall be entitled to a patent unless . . . the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent” To be anticipatory, a reference must describe, either expressly or inherently, each and every limitation and enable one of skill in the art to practice an embodiment of the claimed invention without undue experimentation. *Stored Value Solutions, Inc. v. Card Activation Technologies, Inc.*, 2012 WL 6097674, at *8 (Fed. Cir. 2012). A reference may anticipate inherently if a claim limitation that is not expressly disclosed “is necessarily present, or inherent, in the single anticipating reference.” *In re Aoyama*, 656 F.3d 1293, 1337 (Fed. Cir. 2011) (quoting *Schering Corp. v. Geneva Pharm., Inc.*, 339 F.3d 1373, 1377 (Fed. Cir. 2003)); *Akamai Technologies, Inc. v. Cable & Wireless Internet Services, Inc.*, 344 F.3d 1186, 1195 (Fed. Cir. 2003) (finding hierarchal DNS servers inherent in any Internet system).

Based on ZTE’s present understanding of the Asserted Claims and the apparent constructions WSOU asserts based on its initial infringement contentions, the prior art references and systems listed in Section III and charted in the exhibits identified in Section IV identify items of prior art that anticipate at least one of the Asserted Claims. The charts identify where the

elements of the Asserted Claims can be found in each item of prior art. To the extent a particular charted reference does not disclose all or any portion of a particular claim element, such element would be inherent to one of ordinary skill in the art or, as explained below, it would be obvious to combine that charted reference with one or more other references listed herein to render the claim obvious.

ZTE applies the prior art at least in part in light of WSOU's improper assertions of infringement and improper application of the claims. ZTE does not agree with WSOU's application of the claims, or that the claims satisfy 35 U.S.C. § 112. ZTE's Invalidity Contentions are not admissions or adoptions as to any particular claim scope or construction, or as any admission that any particular element is met in any particular way. ZTE objects to any attempt to imply any particular claim construction from the attached charts. ZTE's Invalidity Contentions are made in the alternative and do not necessarily represent ZTE's agreement or view as to meaning, definiteness, written description support for, or enablement of any claim. ZTE reserves the right to update these Invalidity Contentions once claim construction has taken place.

VI. OBVIOUSNESS UNDER 35 U.S.C. § 103

In general, a claimed invention is unpatentable under 35 U.S.C. § 103(a) if “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.” 35 U.S.C. § 103(a); *Graham v. John Deere Co.*, 383 U.S. 1, 13-14 (1966). The ultimate determination of whether an invention is or is not obvious is a legal conclusion based on underlying factual inquiries including: “(1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed invention and the prior art; and (4) objective evidence of nonobviousness.” *Miles Labs., Inc. v. Shandon, Inc.*, 997 F.2d 870, 877

(Fed. Cir. 1993). *See also Graham*, 383 U.S. at 17-18.

A claimed invention is obvious when a skilled artisan would have been motivated to combine the teaching of the prior art references to achieve the claimed invention, and the skilled artisan would have had a reasonable expectation of success in doing so. *See, e.g., Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011). “Any need or problem known in the field of endeavor at the time of the invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.” *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 420 (2007). While an analysis of any teaching, suggestion, or motivation to combine elements from different prior art references is useful in an obviousness analysis, such analyses should not be rigidly applied; the overall inquiry must be expansive and flexible, and must include the common sense and ordinary creativity of a person having ordinary skill in the art as part of the analysis. *Id.* at 419-21.

A. Scope And Content Of The Prior Art And Well-Known Elements In The Art

Based on ZTE’s present understanding of the Asserted Claims, each of the prior art references standing alone renders at least one of the Asserted Claims obvious in view of the knowledge of a person of ordinary skill in the art as of the time of the alleged invention. It would have been obvious to one of ordinary skill in the art, applying nothing more than his own knowledge to modify the concepts of the prior art references discussed in Sections III and IV to include any of the well-known element in the art discussed below.

Further, ZTE contends that the Asserted Claims are obvious, in part, because they merely arrange old elements, with each performing the same function that had been previously known, to perform and yield no more than what one having ordinary skill would expect from such an arrangement. Because there were a finite number of predictable solutions in the art at the time of

the claimed inventions, it would have been obvious to a person having ordinary skill in the art to pursue the known options. A person skilled in the art of content delivery would have been familiar with all the claim limitations that the patentee used to distinguish the prior art during the prosecution of the Asserted Patents. The identified prior art references merely use those familiar elements for their primary or well-known purposes and in a manner well within the ordinary level of skill in the art. Accordingly, common sense and the knowledge of the prior art render the Asserted Claims invalid.

B. Motivations to Combine

To the extent WSOU argues that a piece of prior art does not disclose a limitation, ZTE reserve the right to rely on any combination of the prior art disclosed in these Invalidity Contentions, including the invalidity claim charts attached hereto and identified in Sections III and VI, the knowledge of those skilled in the art, and/or other prior art to show that it would have been obvious to include the allegedly missing limitation. The combinations and modifications of the prior art to invalidate the Asserted Claims would have arisen from ordinary innovation, ordinary skill, or common sense, or would have been obvious to try or otherwise predictable. In particular, it would have been obvious for a person of ordinary skill in the art to combine the teachings of the references identified in Sections III and VI and thereby obtain the alleged invention of the Asserted Claims for one or more of the following reasons: (1) the combination results from combining prior art elements according to known methods to yield predictable results, (2) the combination results from a simple substitution of one known element for another to obtain predictable results, (3) the combination results from the use of known techniques to improve similar methods in the same way, (4) the combination results from applying a known technique to a known method ready for improvement to yield predictable results, (5) the combination results from choosing a finite

number of identified, predictable solutions, with a reasonable expectation of success, and therefore is obvious to try, (6) the combination results from known work in one field of endeavor prompting a variation of it for use in either the same field or a different one based on design incentives or other market forces and the variations would have been predictable to one of ordinary skill in the art, or (7) the combination results from using known techniques or solutions to address a problem addressed by the alleged invention or a problem that would be encountered by one of ordinary skill in the art working in the field.

Further, a person having ordinary skill would have been motivated to combine the identified prior art based on the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art. Design incentives and other market forces would have prompted those combinations and modifications. “When there is a design or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue known options within his or her technical grasp.” *KSR Int’l*, 127 S. Ct. at 1742. Moreover, some pieces of prior art refer to or discuss other pieces of prior art, illustrating the close technical relationship among the prior art. To the extent any piece of prior art refers to or discusses other pieces of prior art, either expressly or inherently, it would have been obvious to combine those pieces of prior art for that reason.

The Asserted Claims are obvious, in part, because they merely arrange old elements, with each performing the same function that had been known, to perform and yield no more than what one of ordinary skill would expect from such an arrangement. Because there were a finite number of predictable solutions in the art of delivering content in response to a request, it would have been obvious to a person of ordinary skill in the art to pursue the known options. The identified prior art references merely use those familiar elements for their primary or well-known purposes and in

a manner well within the ordinary level of skill in the art. Accordingly, common sense and the knowledge of the prior art render the Asserted Claims invalid as well.

Additionally, a person having ordinary skill in the art would have been motivated to combine these references because these references are related to common objectives and subject matter. The references also share commonalities in terms of their general subject matter as well as the types of equipment, products, and approaches used.

Moreover, the prior art references explicitly or implicitly reference other prior art references, share common authors or inventors, were published in the same journals, were presented at the same conferences, or were developed at common companies, educational or research institutions, or other organizations, all of which would motivate one of skill in the art to combine the references. In addition, the references, and any products, devices, or processes described in the references, existed or were invented in the same time period, providing further motivation for combination.

VII. REFERENCES FOR WHICH ZTE MAY SEEK FURTHER DISCOVERY

These Invalidity Contentions are based on ZTE's current knowledge of the Asserted Patents, the prior art, and WSOU's contentions in this case. ZTE continues to pursue discovery and to investigate and analyze prior art, including but not limited to discovery regarding any disclosures, sales, and offers for sale of the claimed technology before the Asserted Patents were filed and including by subpoenaing third-party entities with potentially relevant information about the invalidity of the Asserted Patents. As such, ZTE reserves the right to amend these Invalidity Contentions.

VIII. SECONDARY CONSIDERATIONS

Notwithstanding the factors and motivations identified above, including the exemplary

combinations identified above and in the claim charts of the Exhibits, and notwithstanding the nascent stage of discovery, and subject to the reservation of rights stated above, ZTE contends that an analysis of secondary considerations further supports the view that each of the Asserted Claims is obvious. Secondary considerations that courts evaluate as objective indicia of obviousness or non-obviousness of an alleged invention include (1) commercial success of the claimed subject matter; (2) long felt but unresolved needs; (3) failure of others; (4) teaching away from the claimed subject matter by the prior art; (5) copying or acclamation by others; and (6) skepticism of experts. *See, e.g., Ruiz v. A.B. Chance Co.*, 357 F.3d 1270, 1274 (Fed. Cir. 2004); *Ecolochem, Inc. v. Southern Cal. Edison Co.*, 227 F.3d 1361, 1379 (Fed. Cir. 2000). WSOU has not identified any secondary considerations yet and ZTE contends that none exist. To the extent WSOU identifies any purported secondary considerations, ZTE reserves all rights to respond at the appropriate time.

IX. INVALIDITY UNDER 35 U.S.C. § 112

The Asserted Claims of the Asserted Patents fail to satisfy 35 U.S.C. § 112. As set forth below, ZTE provides the following grounds of invalidity of the Asserted Claims for lack of written description and/or enablement under 35 U.S.C. § 112 ¶ 1, indefiniteness under 35 U.S.C. § 112 ¶ 2, and for failure to meet the requirements for dependent claims under 35 U.S.C. § 112 ¶¶ 3 and 4. Of course, the deficiencies that render the independent claims invalid for lack of written description and/or enablement under 35 U.S.C. § 112 ¶ 1, indefiniteness under 35 U.S.C. § 112 ¶ 2, and for failure to meet the requirements for dependent claims under 35 U.S.C. § 112 ¶¶ 3 and 4 also infect and thus invalidate the claims depending therefrom.

These grounds are identified based on knowledge in ZTE's possession at this time. Further investigation may uncover additional grounds for invalidity under § 112, and ZTE reserves the right to supplement these disclosures to include all such additional grounds as appropriate. For

example, ZTE reserves the right to amend these Invalidity Contentions to provide additional grounds of invalidity under § 112 in response to any contentions or positions that WSOU may subsequently disclose.

While ZTE's Invalidity Contentions seek to provide alternative theories of invalidity, they are not, and should in no way be seen as, admissions or adoptions as to any particular claim scope or construction, or as any admission that any particular element is met any particular way. ZTE reserves the right to supplement or otherwise amend its contentions after the Court's claim construction ruling, if WSOU amends or alters its infringement contentions in any way, or after ZTE has obtained meaningful discovery from the inventors, the prosecuting attorneys, third parties, and WSOU.

ZTE reserves the right to amend or supplement these contentions to assert any grounds of invalidity based on non-patentable subject matter under 35 U.S.C. § 101, indefiniteness under 35 U.S.C. § 112 ¶ 2, and failure to meet the enablement or written description requirements under 35 U.S.C. § 112 ¶ 1 of any of the Asserted Claims based upon WSOU's claim construction positions, the Court's construction of claim terms, as well as further investigation and discovery.

A. Written Description and Enablement

35 U.S.C. § 112, ¶ 1 provides that a patent specification "shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make, and use the same[.]" The Federal Circuit has held that this language creates two closely related, yet separate requirements: (i) a written description of the invention ("written description") and (ii) a written description of the manner and process of making and using the invention ("enablement"). *See Ariad Pharms., Inc. v. Eli Lilly Co.*, 598 F.3d 1336,

1344 (Fed. Cir. 2010) (*en banc*).

The test for written description requires “an objective inquiry into the four corners of the specification from the person of ordinary skill in the art. Based on that inquiry, the specification must describe an invention understandable to that skilled artisan to show that the inventor actually invented the invention claimed.” *Ariad*, 598 F.3d at 1351. A patent is therefore invalid for inadequate written description unless “the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.” *Id.*

The enablement requirement mandates that the disclosure in the specification describe “the manner and process of making and using [the invention], in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the [invention].” 35 U.S.C. § 112, ¶ 1. For the specification to be enabling, it “must teach those skilled in the art how to make and use the full scope of the claimed invention without ‘undue experimentation.’” *ALZA Corp. v. Andrx Pharms., LLC*, 603 F.3d 935, 940 (Fed. Cir. 2010); *Halliburton Oil Well Cementing Co. v. Walker*, 329 U.S. 1, 12-13 (1946); *Sitrick v. Dreamworks, LLC*, 516 F.3d 993, 999 (Fed. Cir. 2008) (“The scope of the claims must be less than or equal to the scope of the enablement to ensure that the public knowledge is enriched by the patent specification to a degree at least commensurate with the scope of the claims.”) (internal quotes and citation omitted).

The specifications of the Asserted Patents do not reasonably convey to a person of ordinary skill in the art that the inventor had possession of the claimed subject matter as of the filing date of the application, or actually invented the claimed invention, for the claim elements set forth in the accompanying exhibits. Further, the specifications of the Asserted Patents do not enable or

teach a person of ordinary skill in the art to make and use the full scope of the claimed invention without undue experimentation for the reasons set forth in the accompanying exhibits.

1. The '505 Patent

Based on ZTE's present understanding of (and Plaintiff's apparent interpretation of) the Asserted Claims, the Asserted Claims of the '505 Patent below fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide adequate written description and/or enabling disclosure for the following terms:

- “data synchronization” / “data to be synchronized” [Claims 1, 14, 23]
- “remotely located” [Claims 1, 14, 23]
- “first terminal device” / “second . . . terminal device” / “intermediate terminal device” [Claims 1, 14, 23]
- “formatting” [Claims 1, 23]
- “formatter to format” [Claim 14]
- “mobile terminal device” [Claims 3, 25]
- “short-range connection” [Claims 1, 23]
- “short range communication link” [Claims 11, 14, 33]
- “cellular network connection” [Claims 1, 14, 23]
- “data message receiver” [Claim 14]
- “transmitter to transmit” [Claim 14]

2. The '534 Patent

Based on ZTE's present understanding of (and Plaintiff's apparent interpretation of) the Asserted Claims, the Asserted Claims of the '534 Patent below fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide adequate written description and/or enabling

disclosure for the following terms:

- “orthogonal frequency sub-carriers” [Claims 1, 6, 16]
- “as a function of” [Claims 1, 2, 16]
- “maximal number of sub-carriers” [Claims 4, 7]
- “calculated at said receiver” [Claim 5]
- “apparatus” [Claim 6]
- “means for sending” [Claim 6]
- “means for receiving” [Claim 6]
- “radio link” [Claim 6]
- “signal-to-interference ratio” [Claim 8]
- “bit error rate” [Claim 8]

3. The '929 Patent

Based on ZTE’s present understanding of (and Plaintiff’s apparent interpretation of) the Asserted Claims, the Asserted Claims of the '929 Patent below fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide adequate written description and/or enabling disclosure for the following terms:

- “communicating” [Claim 1]
- “establishing a new link” [Claim 1]
- “existing link” [Claim 1]
- “determining if a handoff is desired” [Claim 1]
- “initiating the new link” [Claim 1]
- “achieving uplink synchronization” [Claim 1]
- “processed the transmitted active set update message” [Claim 1]

- “releasing the existing link” [Claim 1]
- “physical layer control information” [Claim 4]
- “measurement reports” [Claim 8]
- “buffering bearer traffic” [Claim 11]
- “characteristic” [Claim 14]

4. The '232 Patent

Based on ZTE’s present understanding of (and Plaintiff’s apparent interpretation of) the Asserted Claims, the Asserted Claims of the '232 Patent below fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide adequate written description and/or enabling disclosure for the following terms:

- “flow control” [Claims 1, 14]
- “flow of data packets” [Claims 1, 14]
- “transmission over a link” [Claims 1, 14]
- “backpressure signal” [Claims 1, 14]
- “period of congestion” [Claims 1, 14]
- “weighting factor” [Claims 1, 14]
- “content of the backpressure signal” [Claims 1, 14]
- “indicates” [Claims 1, 14]

5. The '036 Patent

Based on ZTE’s present understanding of (and Plaintiff’s apparent interpretation of) the Asserted Claims, the Asserted Claims of the '036 Patent below fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide adequate written description and/or enabling disclosure for the following terms:

- “data flow” [Claims 1, 6-10, 12, 17-21, 23, 24]
- “network” [Claims 1, 12, 23, 24]
- “congestion condition” [Claims 1-4, 6, 12-15, 17, 23, 24]
- “network node in the network” [Claims 1, 12, 23, 24]
- “indication that a congestion condition exists” [Claims 1, 23]
- “to enable thereby the control of at least one data flow” [Claims 1, 12, 23, 24]
- “data flow is controlled” [Claims 7, 8, 9, 10, 18, 19, 20]
- “in a manner tending to reduce the congestion condition” [Claims 1, 12, 23, 24]
- “queue maximum occupancy is exceeded” [Claims 2, 13]
- “queue maximum occupancy” [Claims 2, 13]
- “output link capability” [Claims 3, 14]
- “queue data drop rate” [Claims 4, 15]
- “data dropped over time” [Claims 5, 16]
- “an amount of data dropped” [Claims 5, 16]
- “a number of data drops over time” [Claims 5, 16]
- “the MAC address pair” [Claim 17]
- “the MAC address” [Claims 12, 24]
- “in accordance with a Service Level Agreement” [Claims 10, 11, 21, 22]
- “the congestion may be reduced” [Claims 1, 23]
- “those packets associated with the destination address” [Claims 7, 18]
- “those packets associated with only the destination address” [Claims 9, 20]
- “those packets associated with the source and destination addresses” [Claims 8, 19]
- “an indication of an inability to drop packets” [Claims 11, 22]

- “the source address end-node being unknown” [Claims 9, 20]
- “end-node associated with the congestion condition” [Claims 1, 12, 23, 24]

6. The '240 Patent

Based on ZTE’s present understanding of (and Plaintiff’s apparent interpretation of) the Asserted Claims, the Asserted Claims of the '240 Patent below fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide adequate written description and/or enabling disclosure for the following terms:

- “unattended connectivity verification jobs” [Claim 1]
- “verifying connectivity in the network relating to at least Layer-2 and Layer-3 objects” [Claims 1, 6, 13]
- “a given containment hierarchy” [Claims 1, 6, 13]
- “the performing generates” [Claims 1, 6]
- “connectivity verification threshold” [Claims 1, 6, 13]
- “identify Layer-2 and Layer-3 objects within the containment hierarchy” [Claims 1, 6, 13]
- “defining a connectivity verification job” [Claims 1, 6]
- “at least one round of trip delay, jitter, and packet loss” [Claim 10]
- “ping commands” [Claims 11, 18]
- “a ping packet size, a ping data fill pattern, a time to wait for response, and a type of service” [Claim 11]
- “performs scheduled connectivity verification” [Claim 2]
- “performing scheduled connectivity verification” [Claims 17, 18]
- “performing the scheduled connectivity verification process” [Claim 13]

- “the connectivity verification result associated with the alarm” [Claim 13]
- “the connectivity verification results associated with the alarm” [Claim 1, 6]
- “selected connectivity verification results” [Claim 4]
- “user-input specification” [Claims 1, 6, 10, 13]
- “connectivity verification tests” [Claim 17]
- “issuing” [Claim 18]
- “a deviation from the connectivity profile” [Claim 5]
- “the results of each connectivity verification job are compared against a connectivity profile” [Claim 5]
- “a group comprising at least one of a number of ping commands to issue” [Claim 11]
- “a group comprising at least one of a number of traceroute commands to issue” [Claim 12]

7. The '839 Patent

Based on ZTE’s present understanding of (and Plaintiff’s apparent interpretation of) the Asserted Claims, the Asserted Claims of the '839 Patent below fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide adequate written description and/or enabling disclosure for the following terms:

- “the communication network” [Claims 1, 6, 11]
- “said access device” [Claims 2, 4, 7, 9, 11, 12]
- “a server” [Claims 1, 6]
- “route-related information” [Claims 1, 3, 6, 8]
- “route” [Claims 1, 6, 11]

- “predefined using time” [Claims 1, 6]
- “update[ing] a route table item in a route table” [Claims 1, 6]
- “wherein said access device is a Layer 2 access device” [Claims 2, 7]
- “virtual local area network configuration is employed” [Claims 4, 9]
- “a first judger” / “a second judger” / “judge” [Claim 8]
- “digital subscriber line-access multiplexer” [Claim 12]
- “marginal routers” [Claim 9]
- “a route table item” [Claim 3]
- “an access response message” [Claim 4]
- “the least time” [Claims 5, 10]
- “said predefined using time indicates[ing] a[the] using time of said route” [Claims 1, 6]
- “correlated information” [Claims 4, 9]

8. The '060 Patent

Based on ZTE’s present understanding of (and Plaintiff’s apparent interpretation of) the Asserted Claims, the Asserted Claims of the '060 Patent below fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide adequate written description and/or enabling disclosure for the following terms:

- “extracting a feature vector” [Claims 1, 10]
- “the level value is attenuated” [Claims 1, 10]
- “approaches an estimate” [Claims 1, 10]

9. The '905 Patent

Based on ZTE’s present understanding of (and Plaintiff’s apparent interpretation of) the

Asserted Claims, the Asserted Claims of the '905 Patent below fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide adequate written description and/or enabling disclosure for the following terms:

- “transmission period” [Claims 1, 6, 12, 18, 25, 26]
- “determined transmission time interval” [Claims 1, 12, 25]
- “determining to utilize a bandwidth greater than that of the first frequency band during the transmission period” [Claims 1, 12, 25]
- “indicates that said at least one additional frequency band is available” [Claims 1, 6, 12, 18, 25, 26]
- “increasing a transmission band to comprise both said first frequency band and said at least one additional frequency band” [Claims 1, 12, 25]
- “causing transmission of data only on the first frequency band until the reservation response message is received” [Claims 3, 14]
- “during a time interval between data transmission intervals during the transmission period” [Claims 5, 15]
- “at least one frequency channel indicator” [Claims 5, 16]
- “at least one additional frequency band” [Claims 6, 18, 26]
- “monitoring for availability” [Claims 6, 18, 26]
- “triggering a network allocation vector setting” [Claims 7, 19]
- “causing the transmission of the reservation message on each frequency band separately” [Claims 9, 21]
- “transmission parameters” [Claims 10, 22]
- “timing and transmission frequency” [Claims 11, 23]

- “radio medium” [Claims 17, 24]

10. The '960 Patent

Based on ZTE’s present understanding of (and Plaintiff’s apparent interpretation of) the Asserted Claims, the Asserted Claims of the '960 Patent below fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide adequate written description and/or enabling disclosure for the following terms:

- “an original video signal” [Claims 1, 9, 15, 23]
- “video frames” [Claims 1, 9, 15, 23]
- “subsequent video display” [Claims 1, 9, 15, 23]
- “does not represent any portion of any individual frame of the original video signal” [Claims 1, 9, 15, 23]
- “incorporating said encoded virtual reference data” [Claims 1, 15]
- “incorporating into the encoded video signal an indication” [Claims 1, 15]
- “incorporating said encoded portions of said original video signal” [Claims 1, 15]
- “block-based encoding” [Claims 2, 10, 15, 24]
- “block-based motion compensated prediction scheme” [Claims 2, 10, 16, 24]
- “minimize differences” [Claims 3, 17]

11. The '071 Patent

Based on ZTE’s present understanding of (and Plaintiff’s apparent interpretation of) the Asserted Claims, the Asserted Claims of the '071 Patent below fail to satisfy the requirements of § 112, ¶ 1 because the specification fails to provide adequate written description and/or enabling disclosure for the following terms:

- “an image to be projected” [Claims 1, 13]

- “receive[ing] movement signaling associated with the movement of the projector”
[Claims 1, 13, 14]
- “one or more of displacement and movement speed of the projector” [Claims 1, 13, 14]
- “discriminate a movement criterion” [Claims 1, 13, 14]
- “provide associated image data signaling” [Claims 1, 13, 14]
- “wherein the processor is configured” [Claims 1, 13, 14]
- “the processor” [Claims 1, 9, 13, 14]
- “a movement sensor configured to detect movement of the apparatus and/or a projector” [Claim 9]
- “corresponding movement signalling” [claim 9]
- “the processor is configured to discriminate a movement criterion” [Claims 1, 13, 14]
- “the apparatus is a projector, or the apparatus comprises a projector” [Claim 10]
- “an indication of one or more movement criterion of the projector” [Claims 1, 13, 14]

B. Indefiniteness

To satisfy the definiteness requirement of 35 U.S.C. § 112, ¶ 2, the claims must particularly point out and distinctly claim the subject matter which the inventors regarded as their alleged invention such that one skilled in the relevant art would be reasonably apprised of the bounds of the Asserted Claims when read in light of the specification. *Nautilus, Inc. v. Biosig, Inc.*, 134 S.Ct. 2120, 2129 (2014) (Section 112, ¶ 2 “require[s] that a patent’s claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the

invention with reasonable certainty”).

The specifications of the Asserted Patents do not inform one of ordinary skill in the art about the scope of the invention with reasonable certainty with respect to the following terms, based on ZTE’s present understand of (and Plaintiff’s apparent interpretation of) the Asserted Claims, in light of the specification and file history.

1. The ’505 Patent

Based on ZTE’s present understanding of (and Plaintiff’s apparent interpretation of) the Asserted Claims, the Asserted Claims of the ’505 Patent below fail to satisfy the requirements of § 112, ¶ 2 because the claims fail to point out and distinctly claim the subject matter which the inventors regard as the alleged invention for the following terms:

- “data synchronization” / “data to be synchronized” [Claims 1, 14, 23]
- “remotely located” [Claims 1, 14, 23]
- “first terminal device” / “second . . . terminal device” / “intermediate terminal device” [Claims 1, 14, 23]
- “formatting” [Claims 1, 23]
- “formatter to format” [Claim 14]
- “mobile terminal device” [Claims 3, 25]
- “short-range connection” [Claims 1, 23]
- “short range communication link” [Claims 11, 14, 33]
- “cellular network connection” [Claims 1, 14, 23]
- “data message receiver” [Claim 14]
- “transmitter to transmit” [Claim 14]

2. “The ’534 Patent

Based on ZTE’s present understanding of (and Plaintiff’s apparent interpretation of) the Asserted Claims, the Asserted Claims of the ’534 Patent below fail to satisfy the requirements of § 112, ¶ 2 because the claims fail to point out and distinctly claim the subject matter which the inventors regard as the alleged invention for the following terms:

- “orthogonal frequency sub-carriers” [Claims 1, 6, 16]
- “as a function of” [Claims 1, 2, 16]
- “maximal number of sub-carriers” [Claims 4, 7]
- “calculated at said receiver” [Claim 5]
- “apparatus” [Claim 6]
- “means for sending” [Claim 6]
- “means for receiving” [Claim 6]
- “radio link” [Claim 6]
- “signal-to-interference ratio” [Claim 8]
- “bit error rate” [Claim 8]

3. The ’929 Patent

Based on ZTE’s present understanding of (and Plaintiff’s apparent interpretation of) the Asserted Claims, the Asserted Claims of the ’929 Patent below fail to satisfy the requirements of § 112, ¶ 2 because the claims fail to point out and distinctly claim the subject matter which the inventors regard as the alleged invention for the following terms:

- “communicating” [Claim 1]
- “establishing a new link” [Claim 1]
- “existing link” [Claim 1]
- “determining if a handoff is desired” [Claim 1]

- “initiating the new link” [Claim 1]
- “achieving uplink synchronization” [Claim 1]
- “processed the transmitted active set update message” [Claim 1]
- “releasing the existing link” [Claim 1]
- “physical layer control information” [Claim 4]
- “measurement reports” [Claim 8]
- “buffering bearer traffic” [Claim 11]
- “characteristic” [Claim 14]

4. The '232 Patent

Based on ZTE’s present understanding of (and Plaintiff’s apparent interpretation of) the Asserted Claims, the Asserted Claims of the '232 Patent below fail to satisfy the requirements of § 112, ¶ 2 because the claims fail to point out and distinctly claim the subject matter which the inventors regard as the alleged invention for the following terms:

- “flow control” [Claims 1, 14]
- “flow of data packets” [Claims 1, 14]
- “transmission over a link” [Claims 1, 14]
- “backpressure signal” [Claims 1, 14]
- “period of congestion” [Claims 1, 14]
- “weighting factor” [Claims 1, 14]
- “content of the backpressure signal” [Claims 1, 14]
- “indicates” [Claims 1, 14]

5. The '036 Patent

Based on ZTE’s present understanding of (and Plaintiff’s apparent interpretation of) the

Asserted Claims, the Asserted Claims of the '036 Patent below fail to satisfy the requirements of § 112, ¶ 2 because the claims fail to point out and distinctly claim the subject matter which the inventors regard as the alleged invention for the following terms:

- “data flow” [Claims 1, 6-10, 12, 17-21, 23, 24]
- “network” [Claims 1, 12, 23, 24]
- “congestion condition” [Claims 1-4, 6, 12-15, 17, 23, 24]
- “network node in the network” [Claims 1, 12, 23, 24]
- “indication that a congestion condition exists” [Claims 1, 23]
- “to enable thereby the control of at least one data flow” [Claims 1, 12, 23, 24]
- “data flow is controlled” [Claims 7, 8, 9, 10, 18, 19, 20]
- “in a manner tending to reduce the congestion condition” [Claims 1, 12, 23, 24]
- “queue maximum occupancy is exceeded” [Claims 2, 13]
- “queue maximum occupancy” [Claims 2, 13]
- “output link capability” [Claims 3, 14]
- “queue data drop rate” [Claims 4, 15]
- “data dropped over time” [Claims 5, 16]
- “an amount of data dropped” [Claims 5, 16]
- “a number of data drops over time” [Claims 5, 16]
- “the MAC address pair” [Claim 17]
- “the MAC address” [Claim 12, 24]
- “in accordance with a Service Level Agreement” [Claims 10, 11, 21, 22]
- “the congestion may be reduced” [Claims 1, 23]
- “those packets associated with the destination address” [Claims 7, 18]

- “those packets associated with only the destination address” [Claims 9, 20]
- “those packets associated with the source and destination addresses” [Claims 8, 19]
- “an indication of an inability to drop packets” [Claims 11, 22]
- “the source address end-node being unknown” [Claims 9, 20]
- “end-node associated with the congestion condition” [Claims 1, 12, 23, 24]

6. The '240 Patent

Based on ZTE’s present understanding of (and Plaintiff’s apparent interpretation of) the Asserted Claims, the Asserted Claims of the '240 Patent below fail to satisfy the requirements of § 112, ¶ 2 because the claims fail to point out and distinctly claim the subject matter which the inventors regard as the alleged invention for the following terms:

- “unattended connectivity verification jobs” [Claim 1]
- “verifying connectivity in the network relating to at least Layer-2 and Layer-3 objects” [Claims 1, 6, 13]
- “a given containment hierarchy” [Claims 1, 6, 13]
- “the performing generates” [Claims 1, 6]
- “connectivity verification threshold” [Claims 1, 6, 13]
- “identify Layer-2 and Layer-3 objects within the containment hierarchy” [Claims 1, 6, 13]
- “defining a connectivity verification job” [Claims 1, 6]
- “at least one round of trip delay, jitter, and packet loss” [Claim 10]
- “ping commands” [Claims 11, 18]
- “a ping packet size, a ping data fill pattern, a time to wait for response, and a type of service” [Claim 11]

- “performs scheduled connectivity verification” [Claim 2]
- “performing scheduled connectivity verification” [Claims 17, 18]
- “performing the scheduled connectivity verification process” [Claim 13]
- “the connectivity verification result associated with the alarm” [Claim 13]
- “the connectivity verification results associated with the alarm” [Claim 1, 6]
- “selected connectivity verification results” [Claim 4]
- “user-input specification” [Claims 1, 6, 10, 13]
- “connectivity verification tests” [Claim 17]
- “issuing” [Claim 18]
- “a deviation from the connectivity profile” [Claim 5]
- “the results of each connectivity verification job are compared against a connectivity profile” [Claim 5]
- “a group comprising at least one of a number of ping commands to issue” [Claim 11]
- “a group comprising at least one of a number of traceroute commands to issue” [Claim 12]

7. The '839 Patent

Based on ZTE’s present understanding of (and Plaintiff’s apparent interpretation of) the Asserted Claims, the Asserted Claims of the '839 Patent below fail to satisfy the requirements of § 112, ¶ 2 because the claims fail to point out and distinctly claim the subject matter which the inventors regard as the alleged invention for the following terms:

- “the communication network” [Claims 1, 6, 11]
- “said access device” [Claims 2, 4, 7, 9, 11, 12]

- “a server” [Claims 1, 6]
- “route-related information” [Claims 1, 3, 6, 8]
- “route” [Claims 1, 6, 11]
- “predefined using time” [Claims 1, 6]
- “update[ing] a route table item in a route table” [Claims 1, 6]
- “wherein said access device is a Layer 2 access device” [Claims 2, 7]
- “virtual local area network configuration is employed” [Claims 4, 9]
- “a first judger” / “a second judger” / “judge” [Claim 8]
- “digital subscriber line-access multiplexer” [Claim 12]
- “marginal routers” [Claim 9]
- “a route table item” [Claim 3]
- “an access response message” [Claim 4]
- “the least time” [Claims 5, 10]
- “said predefined using time indicates[ing] a[the] using time of said route” [Claims 1, 6]
- “correlated information” [Claims 4, 9]

8. The '060 Patent

Based on ZTE’s present understanding of (and Plaintiff’s apparent interpretation of) the Asserted Claims, the Asserted Claims of the '060 Patent below fail to satisfy the requirements of § 112, ¶ 2 because the claims fail to point out and distinctly claim the subject matter which the inventors regard as the alleged invention for the following terms:

- “extracting a feature vector” [Claims 1, 10]
- “the level value is attenuated” [Claims 1, 10]

- “approaches an estimate” [Claims 1, 10]

9. The '905 Patent

Based on ZTE’s present understanding of (and Plaintiff’s apparent interpretation of) the Asserted Claims, the Asserted Claims of the '905 Patent below fail to satisfy the requirements of § 112, ¶ 2 because the claims fail to point out and distinctly claim the subject matter which the inventors regard as the alleged invention for the following terms:

- “transmission period” [Claims 1, 6, 12, 18, 25, 26]
- “determined transmission time interval” [Claims 1, 12, 25]
- “determining to utilize a bandwidth greater than that of the first frequency band during the transmission period” [Claims 1, 12, 25]
- “indicates that said at least one additional frequency band is available” [Claims 1, 6, 12, 18, 25, 26]
- “increasing a transmission band to comprise both said first frequency band and said at least one additional frequency band” [Claims 1, 12, 25]
- “causing transmission of data only on the first frequency band until the reservation response message is received” [Claims 3, 14]
- “during a time interval between data transmission intervals during the transmission period” [Claims 5, 15]
- “at least one frequency channel indicator” [Claims 5, 16]
- “at least one additional frequency band” [Claims 6, 18, 26]
- “monitoring for availability” [Claims 6, 18, 26]
- “triggering a network allocation vector setting” [Claims 7, 19]
- “causing the transmission of the reservation message on each frequency band

separately” [Claims 9, 21]

- “transmission parameters” [Claims 10, 22]
- “timing and transmission frequency” [Claims 11, 23]
- “radio medium” [Claims 17, 24]

10. The '960 Patent

Based on ZTE’s present understanding of (and Plaintiff’s apparent interpretation of) the Asserted Claims, the Asserted Claims of the '960 Patent below fail to satisfy the requirements of § 112, ¶ 2 because the claims fail to point out and distinctly claim the subject matter which the inventors regard as the alleged invention for the following terms:

- “an original video signal” [Claims 1, 9, 15, 23]
- “video frames” [Claims 1, 9, 15, 23]
- “subsequent video display” [Claims 1, 9, 15, 23]
- “does not represent any portion of any individual frame of the original video signal” [Claims 1, 9, 15, 23]
- “incorporating said encoded virtual reference data” [Claims 1, 15]
- “incorporating into the encoded video signal an indication” [Claims 1, 15]
- “incorporating said encoded portions of said original video signal” [Claims 1, 15]
- “block-based encoding” [Claims 2, 10, 15, 24]
- “block-based motion compensated prediction scheme” [Claims 2, 10, 16, 24]
- “minimize differences” [Claims 3, 17]

11. The '071 Patent

Based on ZTE’s present understanding of (and Plaintiff’s apparent interpretation of) the Asserted Claims, the Asserted Claims of the '071 Patent below fail to satisfy the requirements of

§ 112, ¶ 2 because the claims fail to point out and distinctly claim the subject matter which the inventors regard as the alleged invention for the following terms:

- “an image to be projected” [Claims 1, 13]
- “receive[ing] movement signaling associated with the movement of the projector” [Claims 1, 13, 14]
- “one or more of displacement and movement speed of the projector” [Claims 1, 13, 14]
- “discriminate a movement criterion” [Claims 1, 13, 14]
- “provide associated image data signaling” [Claims 1, 13, 14]
- “wherein the processor is configured” [Claims 1, 13, 14]
- “the processor” [Claims 1, 9, 13, 14]
- “a movement sensor configured to detect movement of the apparatus and/or a projector” [Claim 9]
- “corresponding movement signalling” [claim 9]
- “the processor is configured to discriminate a movement criterion” [Claims 1, 13, 14]
- “the apparatus is a projector, or the apparatus comprises a projector” [Claim 10]
- “an indication of one or more movement criterion of the projector” [Claims 1, 13, 14]

X. INVALIDITY UNDER 35 U.S.C. § 101

The Asserted Claims of the Asserted Patents fail to satisfy 35 U.S.C. § 101. As set forth below, ZTE provide the grounds of invalidity of the Asserted Claims of the Asserted Patents for failure to provide patentable subject matter under 35 U.S.C. § 101. Of course, the deficiencies that

render the independent claims invalid for lack of patentable subject matter under 35 U.S.C. § 101 also infect and thus invalidate the claims depending therefrom.

These grounds are identified based on knowledge in ZTE's possession at this time. Further investigation may uncover additional grounds for invalidity under § 101, and ZTE reserve the right to supplement these disclosures to include all such additional grounds as appropriate. For example, ZTE reserve the right to amend these Invalidity Contentions to provide additional grounds of invalidity under § 101 in response to any contentions or positions that WSOU may subsequently disclose.

While ZTE's Invalidity Contentions seek to provide alternative theories of invalidity, they are not, and should in no way be seen as, admissions or adoptions as to any particular claim scope or construction, or as any admission that any particular element is met any particular way. ZTE reserve the right to supplement or otherwise amend its contentions after the Court's claim construction ruling, if WSOU amends or alters its infringement contentions in any way, or after ZTE have obtained meaningful discovery from the inventors, the prosecuting attorneys, third parties, and WSOU.

ZTE reserve the right to amend or supplement these contentions to assert any grounds of invalidity based on non-patentable subject matter under 35 U.S.C. § 101, indefiniteness under 35 U.S.C. § 112 ¶ 2, and failure to meet the enablement or written description requirements under 35 U.S.C. § 112 ¶ 1 of any of the Asserted Claims based upon WSOU's claim construction positions, the Court's construction of claim terms, as well as further investigation and discovery.

The Asserted Claims of the Asserted Patents are invalid for failure to meet the requirements of 35 U.S.C. § 101. Under 35 U.S.C. § 101, courts determine whether claims are directed to patent-eligible subject matter by: (1) identifying whether the claims involve an underlying law of nature,

mathematical formula, natural phenomenon, or abstract idea; and (2) assessing whether any additional features are significant enough to make the claims patent-eligible or, instead, are conventional, well-understood, or routine steps or components (such as general-purpose computer hardware or software), token extra-solution activity, mere data-gathering, or field-of-use limitations. *See, e.g., Alice Corp. v. CLS Bank International*, 134 S. Ct. 2347, 2350 (June 19, 2014) (applying the two-step framework from *Mayo*); *Bilski v. Kappos*, 130 S. Ct. 3218, 3230 (2010). Claims that “merely require generic computer implementation” and lack any “additional features” or “inventive concept” sufficient to transform the claimed law of nature, mathematical formula, natural phenomenon, or abstract idea into a patent-eligible application, “amount to ‘nothing significantly more’ than an instruction to apply the [law of nature, mathematical formula, natural phenomenon, or abstract idea] . . . using some unspecified, generic computer” are not patentable. *Alice Corp.*, 134 S.Ct. 2357-58. A method claim directed toward non-patentable subject matter does not become patentable if directed instead to a system because the method versus system distinction “add[s] nothing of substance to the underlying [law of nature, mathematical formula, natural phenomenon, or abstract idea].” *Id.* at 2360.

Each Asserted Claim is directed to ineligible subject matter under 35 U.S.C. § 101. ZTE will present any § 101 motions after the Court issues its Markman order.

1. The ’505 Patent

Based on ZTE’s present understanding of (and Plaintiff’s apparent interpretation of) the Asserted Claims, the Asserted Claims of the ’505 Patent below are ineligible under § 101 because they fail to recite a non-abstract idea and further fail to claim “significantly more” in order to eligible:

- The asserted claims merely recite abstract idea directed to unpatentable subject matter such as sending, receiving, and formatting data using generic computing

equipment and devices.

2. The '534 Patent

Based on ZTE's present understanding of (and Plaintiff's apparent interpretation of) the Asserted Claims, the Asserted Claims of the '534 Patent below are ineligible under § 101 because they fail to recite a non-abstract idea and further fail to claim "significantly more" in order to eligible:

- The asserted claims merely recite abstract idea directed to unpatentable subject matter such as sending, and receiving data using generic computing equipment and devices.

3. The '929 Patent

Based on ZTE's present understanding of (and Plaintiff's apparent interpretation of) the Asserted Claims, the Asserted Claims of the '929 Patent below are ineligible under § 101 because they fail to recite a non-abstract idea and further fail to claim "significantly more" in order to eligible:

- The asserted claims merely recite abstract idea directed to unpatentable subject matter such as collecting, analyzing, and outputting data using generic computing equipment and devices. Additionally, the claims can be performed entirely by mental processes and with pen and paper.

4. The '232 Patent

Based on ZTE's present understanding of (and Plaintiff's apparent interpretation of) the Asserted Claims, the Asserted Claims of the '232 Patent below are ineligible under § 101 because they fail to recite a non-abstract idea and further fail to claim "significantly more" in order to eligible:

- The asserted claims merely recite abstract idea directed to unpatentable subject

matter such as collecting, analyzing, and outputting data using generic computing equipment and devices.

5. The '036 Patent

Based on ZTE's present understanding of (and Plaintiff's apparent interpretation of) the Asserted Claims, the Asserted Claims of the '036 Patent below are ineligible under § 101 because they fail to recite a non-abstract idea and further fail to claim "significantly more" in order to eligible:

- The asserted claims merely recite abstract idea directed to unpatentable subject matter such as collecting, analyzing, and outputting data using generic computing equipment and devices.

6. The '240 Patent

Based on ZTE's present understanding of (and Plaintiff's apparent interpretation of) the Asserted Claims, the Asserted Claims of the '240 Patent below are ineligible under § 101 because they fail to recite a non-abstract idea and further fail to claim "significantly more" in order to eligible:

- The asserted claims merely recite abstract idea directed to unpatentable subject matter such as collecting, analyzing, and outputting data using generic computing equipment and devices.

7. The '839 Patent

Based on ZTE's present understanding of (and Plaintiff's apparent interpretation of) the Asserted Claims, the Asserted Claims of the '839 Patent below are ineligible under § 101 because they fail to recite a non-abstract idea and further fail to claim "significantly more" in order to eligible:

- The asserted claims merely recite abstract idea directed to unpatentable subject

matter such as collecting, analyzing, and outputting data using generic computing equipment and devices. Additionally, the claims can be performed entirely by mental processes and with pen and paper.

8. The '060 Patent

Based on ZTE's present understanding of (and Plaintiff's apparent interpretation of) the Asserted Claims, the Asserted Claims of the '060 Patent below are ineligible under § 101 because they fail to recite a non-abstract idea and further fail to claim "significantly more" in order to be eligible:

- The asserted claims merely recite abstract idea directed to unpatentable subject matter such as generating, collecting, analyzing, and outputting data using generic computing equipment and devices.

9. The '905 Patent

Based on ZTE's present understanding of (and Plaintiff's apparent interpretation of) the Asserted Claims, the Asserted Claims of the '905 Patent below are ineligible under § 101 because they fail to recite a non-abstract idea and further fail to claim "significantly more" in order to be eligible:

- The asserted claims merely recite abstract idea directed to unpatentable subject matter such as collecting, analyzing, and outputting data using generic computing equipment and devices.

10. The '960 Patent

Based on ZTE's present understanding of (and Plaintiff's apparent interpretation of) the Asserted Claims, the Asserted Claims of the '960 Patent below are ineligible under § 101 because they fail to recite a non-abstract idea and further fail to claim "significantly more" in order to be eligible:

- The asserted claims merely recite abstract idea directed to unpatentable subject matter such as generating, collecting, analyzing, and outputting data using generic computing equipment and devices.

11. The '071 Patent

Based on ZTE's present understanding of (and Plaintiff's apparent interpretation of) the Asserted Claims, the Asserted Claims of the '071 Patent below are ineligible under § 101 because they fail to recite a non-abstract idea and further fail to claim "significantly more" in order to be eligible:

- The asserted claims merely recite abstract idea directed to unpatentable subject matter such as collecting, analyzing, and outputting data using generic computing equipment and devices.

DATED: January 6, 2021

Respectfully submitted,

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ATTORNEY FOR DEFENDANTS

CERTIFICATE OF SERVICE

I hereby certify that all counsel of record, who are deemed to have consented to electronic service, are being served on January 6, 2021 with a copy of this document via email.

/s/Lionel M. Lavenue

Lionel M. Lavenue